

2009-1029
(Serial No. 09/877,159)

**United States Court of Appeals
For the Federal Circuit**

IN RE DAVID M. BAGGETT

Appeal from the United States Patent
and Trademark Office,
Board of Patent Appeals and Interferences.

**REPLY BRIEF FOR APPELLANT
DAVID M. BAGGETT**

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CERTIFICATE OF INTEREST

Counsel for Appellant David M. Baggett certifies the following (use "None" if applicable):

1. The full name of every party or amicus represented by me is:

David M. Baggett

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

ITA Software, Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

none

4. ☒ There is no such corporation as listed in paragraph 3.

5. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

**Fish & Richardson P.C., Denis G. Maloney, Thomas A. Brown,
and Tonya S. Drake.**

2/17/09
Date



Denis G. Maloney

TABLE OF CONTENTS

CERTIFICATE OF INTEREST	i
TABLE OF CONTENTS	ii
TABLE OF AUTHORITIES	iv
I. INTRODUCTION	1
II. ARGUMENT	2
A. Claims 1 and 11, Properly Understood, Do Not Encompass the Cited Art.....	2
1. The Claims Require that Determining Interior Cities Be Performed as a Separate Pre-Processing Step.....	2
2. ATPCO Does Not Disclose or Suggest a Separate Pre-Processing Step, Instead Suggesting the Inefficient Approach Excluded from the Scope of the Claims.....	5
3. ATPCO Does Not Disclose the Second or Third Steps of the Claim	7
4. The Other Cited Art Fails to Disclose the Claimed Pre-Processing Step, or, as a Result, the Second or Third Steps	9
5. The Director's Inherency Argument Is Wrong as a Matter of the Factual Record.....	11
B. The Claims of Group Two Are Allowable for Similar Reasons.....	11
C. None of the Cited Art Discloses or Suggests the Hash Table of the Group Three Claims	12
1. Neither the Board nor the Director Explains Why a Ordinarily-Skilled Artisan Would Search for a List of Gateway Cities	12
2. The Director Has Failed to Explain Why an Ordinarily-Skilled Artisan Would Make the Hindsight-Motivated Inferences Suggested by the Board	13

3.	The Director Fails to Explain Why a Person of Ordinary Skill in the Art Would Have had a Reason to Use a Hash Table in the Context of a Constructed Fare.....	15
D.	The Board's Decision on the Claims of Group Four, Reciting Memoization, Should Be Reversed.....	17
III.	CONCLUSION	18

TABLE OF AUTHORITIES

CASES

<i>In re Bond</i> , 910 F.2d 831 (Fed. Cir. 1990)	5
<i>In re Grasselli</i> , 713 F.2d 731 (Fed. Cir. 1983)	14
<i>In re Kahn</i> , 441 F.3d 977 (Fed. Cir. 2006)	14, 15
<i>In re Morris</i> , 127 F.3d 1048 (Fed. Cir. 1997)	5
<i>In re Sang-Su Lee</i> , 277 F.3d 1338 (Fed. Cir. 2002)	15
<i>In re Translogic Tech.</i> , 504 F.3d 1249 (Fed. Cir. 2007)	14
<i>In re Van Der Kop</i> , 9 F.3d 1531 (Fed. Cir. 1993)	15
<i>KSR Int'l Co. v. Teleflex Inc.</i> , 550 U.S. 398, 127 S. Ct. 1727 (2007).....	12, 15, 16
<i>Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc.</i> , 152 F.3d 1368 (Fed. Cir. 1998)	2
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005)	3
<i>Unique Concepts, Inc. v. Brown</i> , 939 F.2d 1558 (Fed. Cir. 1991)	6
<i>Ziggity Systems, Inc. v. Val Watering Systems</i> , 769 F.Supp. 752 (E.D. Pa. 1990)	15

STATUTES

35 U.S.C. § 103	14
35 U.S.C. § 141	17

I. INTRODUCTION

In his opening brief, Mr. Baggett argued that none of the cited art performed the claimed “pre-processing” step, and that the Board’s contention to the contrary ignored the contrast drawn by the specification between an inefficient approach to claim construction and the novel, claimed approach. The Director’s primary response is that the distinction cannot be found in the claims. But the Director is mistaken. The term “pre-processing” in the claims evokes the key distinction between the inefficient approach explicitly disclaimed by the specification and the novel approach of the claims. The Director’s failure to properly consider the role of the specification in understanding the scope of the claims requires that his position be rejected.

With respect to the claims that require a hash table, the Director’s error is twofold. First, the Director fails to acknowledge that even under the Board’s attenuated logic, a person of ordinary skill in the art would not arrive at the claimed invention because none of the cited art suggests searching a hash table returning “a list of gateway cities.” Second, the Director fails to explain *why* a person of ordinary skill in the art would follow the Board’s attenuated logic, which requires transforming fares into route maps into graphs into edge lists into tables with very specific indexes—all with utterly no evidence supporting the view that a person of ordinary skill in the art would make such leaps of intuition.

Ultimately, the Board and the Director have failed to support their burden of presenting substantial evidence to support the Board's decision. This Court should therefore reverse the decision below and remand with instructions to allow all pending claims.

II. ARGUMENT

A. Claims 1 and 11, Properly Understood, Do Not Encompass the Cited Art

1. The Claims Require that Determining Interior Cities Be Performed as a Separate *Pre-Processing* Step

The claimed step of “determining interior cities that appear with gateway cities in arbitraries” (A54) is a *separate “pre-processing” step* that is distinct from (and prior to) determining or applying arbitraries. (See Blue Br. at 4, 8 & 33; see also, e.g., A798 (noting that the “pre-processing teaching is totally missing from the cited art”). The Director, however, adheres to the Board's view that “pre-processing” by “determining interior cities that appear with gateway cities in arbitraries” is satisfied simply by determining arbitraries in the ordinary course of constructing fares. (See Red Br. at 24-25.) Such an interpretation of the claim is directly contrary to the plain language of the claim as well as the disclosure of the specification, and must be rejected.

Contrary to the Director's argument (Red Br. at 8), the steps of claim 1 must be performed in order. See *Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc.*, 152 F.3d 1368, 1376 (Fed. Cir. 1998). The claim's use of the word “pre-

processing” signals that the first step comes first. The second step (“searching a database having published fares for gateway cities corresponding to *the determined interior cities appearing in the arbitraries*”) must be performed second; otherwise the reference to “the determined cities,” whose antecedent basis lies in step 1, would be meaningless. The third step (“producing the constructed fare, by: applying an arbitrary corresponding to one of the interior cities to a published fare involving one of *the gateway cities . . .*”) must be performed third, as evidenced by that step’s reference to “the gateway cities” that result from the search claimed in the second step.

The significance of the order of the steps is that the pre-processing step is performed without reference to any particular published fare or gateway city. Indeed, the claim requires that the pre-processing step take place *before* a particular published fare is determined (as recited in step 2). As will be shown below, the Director’s arguments all rely on an interpretation of the claim in which the “pre-processing” step takes place *after* searching for published fares as recited in step 2.

The specification further belies the Director’s understanding of the scope of claim 1. *See, e.g., Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (“[T]he specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor. In that instance as well, the inventor has dictated the correct

claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive.") As Mr. Baggett described in his opening brief (Blue Br. at 7-8), the specification describes an unclaimed, inefficient approach that lacks the novel pre-processing step. To create a two-component fare, this inefficient approach iterates through every possible airline *a*, then through every possible city with an airport *c1*, then through every possible city with an airport *c2*, then through every possible city with an airport *c3*, attempting to construct a fare on airline *a* for *c1-c2-c3*. (A105; *see also* Blue Br. at 7-8.) The inefficient process for constructing a three-component adds additional recursive steps. (*Id.*) As shown in Mr. Baggett's opening brief and below, this inefficient process is reflected in the ATPCO manual.

The present application draws a clear distinction between this inefficient approach and the claimed solution. One "key" to the claimed approach is to "start only with interior cities known to appear in some arbitraries" (A107-08). This "key" is reflected in the pre-processing step of the claim element requiring "determining interior cities that appear with gateway cities in arbitraries." Thus, the specification makes it clear that the described inefficient approach, which lacks this pre-processing step, is outside the scope of the claims.

During prosecution, claims are "given their broadest reasonable interpretation *consistent with the specification*, and . . . claim language should be

read in light of the specification as it would be interpreted by one of ordinary skill in the art.” *In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990) (internal quotation marks and brackets omitted; emphasis added); *see also In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997) (“[I]t would be unreasonable for the PTO to ignore any interpretive guidance afforded by the applicant's written description. . . .”). Because the claim language and the application’s specification both require that performing the pre-processing step be separately from—and before—determining an arbitrary, the Director’s contrary view cannot be accepted.

2. ATPCO Does Not Disclose or Suggest a Separate Pre-Processing Step, Instead Suggesting the Inefficient Approach Excluded from the Scope of the Claims

Nowhere does the ATPCO Manual suggest pre-processing by determining interior cities that appear with gateway cities in arbitraries. To the contrary, describing the process of constructing fares, the ATPCO manual notes: “*Every possible constructed record will be attempted.*” (A1004; A1142 (emphasis added).) This disclosure evokes the inefficient approach specifically excluded from the scope of the invention. (A105.) There is no suggestion in the cited art that this process may be made efficient by performing a pre-processing step that determines interior cities that appear with gateway cities in arbitraries for a particular airline.

The disclosure on which the Director relies cannot satisfy the “pre-processing” limitation because it takes place *after* retrieving a published fare from a database (allegedly satisfying step 2 of claim 1). The Director argues:

[W]hen processing the data to look for valid arbitrary fares that could be combined *with a particular published fare*, because one of the cities in the published fare *must match the major (gateway) city* in the arbitrary fare, and because the arbitraries are stored as a city pair, this processing necessarily determines the minor (interior) city for an airline.

(Red Br. at 25, *citing* A23 (emphasis added).) The Director’s argument assumes that a “particular published fare” and a “major (gateway) city” have already been determined. In the claim, however, determination of gateway cities and published fares *do not take place until step 2*. Because the steps must be performed in order, the Director’s reliance on simply “determining an arbitrary” to satisfy the pre-processing limitation must be rejected.

Moreover, nowhere does the Director explain how the ATPCO reference determines interior cities that appear with gateway cities in arbitraries *for an airline*. Mr. Baggett’s specification explains that the determination of interior cities is performed on an airline-by-airline basis. (A108.) This is reflected in the claim language “for an airline.” Nor is the claim language “for an airline” mere surplusage. *See Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1563 (Fed. Cir. 1991) (rejecting an “interpretation [that] would render meaningless express claim limitations”). In fact, the phrase provides antecedent basis for “*the* airline” recited

in claim 11. (A55-56.) The ATPCO reference does not determine interior cities in arbitraries *for a particular airline* because it does not distinguish between arbitraries for different airlines. Rather, it treats all arbitraries for all airlines as a group. (A1145-48.)

The ATPCO reference does disclose various “pre-construction” steps (A1145-46). But none of these steps “determine interior cities that appear with gateway cities in arbitraries for an airline.” Rather, the “pre-construction” steps read data files containing arbitraries and creates an “output dataset file” containing these arbitraries as well as published fare information. (A1146.) No separate “determination” is made of which interior cities actually appear with gateway cities in arbitraries. To the contrary, after the “pre-construction” steps are completed, the reference “[b]uilds all possible combinations” of constructed fares, rather than limiting itself to constructed fares involving interior cities appearing with gateway cities for a particular airline.

Thus, the Director has failed to point to any express or inherent disclosure in ATPCO of pre-processing by determining interior cities that appear with gateway cities in arbitraries for an airline.

3. ATPCO Does Not Disclose the Second or Third Steps of the Claim

Contrary to the Director’s argument, Mr. Baggett does dispute that the ATPCO reference discloses the second and third steps of claim 1, for the same

reason the reference does not disclose the first step of the claim. Steps 2 and 3 both require reference to the interior cities that were “determined” in the first step—a step that does not appear in the ATPCO reference.

But even if the ATPCO disclosure were held to satisfy the “preprocessing” limitation, it would not satisfy the second or third limitations. With respect to the second limitation, ATPCO does not disclose “searching a database having published fares for gateway cities *corresponding to the determined interior cities* appearing in the arbitraries.” To the contrary, the ATPCO reference reads *all* published fares into the “output dataset file,” not just those published fares that correspond to a (nonexistent) list of determined interior cities served by a particular airline. (A1146.)

ATPCO fails to disclose the third limitation for a similar reason. The reference does not “apply[] an arbitrary . . . to a published fare involving one of the gateway cities *that corresponds to the determined interior cities*,” simply because no interior cities were determined,¹ and there can therefore be no gateway cities corresponding to these nonexistent determined interior cities.

¹ And certainly no interior cities that appear with gateway cities in arbitraries for a *particular airline* were determined.

4. The Other Cited Art Fails to Disclose the Claimed Pre-Processing Step, or, as a Result, the Second or Third Steps

The “pre-processing” step is a necessary pre-requisite to the second and third steps. None of the cited art discloses the claimed pre-processing step. As a result, the second and third steps, each of which rely on a specific output, “determined interior cities appearing in the arbitraries,” from the first step, are likewise not disclosed or suggested in the prior art.²

The argument section of the Director’s brief declines to discuss any specific disclosure in Gardner, and does not seek to refute Mr. Baggett’s showing that the reference would not have rendered the pending claims obvious. (*See* Red Br. at 26; Blue Br. at 22-23 & 33.) The Director’s discussion of Gardner earlier in his brief (Red Br. at 10-11) sheds no further light on the relevance of this reference. Nowhere does the Director show whether the system disclosed in Gardner actually constructs fares,³ and if it does, how Gardner’s fare construction process works.

The Director argues that the PTO’s burden was satisfied in part by Mr. Baggett’s admitted prior art. (Red Br. at 26-27.) None of the alleged admissions, however, suggest the claimed invention. Mr. Baggett does not claim “industry-wide rules regarding fare construction.” (Red Br. at 26.) Mr. Baggett does not

² Thus, contrary to the Director’s argument, Mr. Baggett does not concede that the second and third steps are present in the prior art. (*Compare* Red Br. at 22 with A907-08.)

³ The Gardner system might, for example, query fare information from an external source such as ATPCO.

claim simply “us[ing] a computer system to store the published fares, arbitraries, fare construction tables, and rules for constructing fares.” (*Id.*) Mr. Baggett does not claim “search[ing] and sort[ing] the data provided by ATPCO to provide a database of valid constructed fares.” (Red Br. at 27.)⁴

In short, the Director has pointed to no disclosure in Gardner, and no admission of the applicant, to suggest that the claimed pre-processing step may be found in the prior art. Without the pre-processing step, the cited art likewise fails to disclose the second or third steps of claim 1. The cited art cannot disclose “searching a database having published fares for gateway cities corresponding to the *determined interior cities* appearing in the arbitraries,” since there is no disclosure of interior cities determined in a pre-processing step in any combination of ATPCO, Gardner and Mr. Baggett’s admitted prior art. For these same reasons, the cited art cannot disclose “applying an arbitrary . . . to a published fare involving one of the gateway cities *that corresponds to the determined interior cities* appearing in the arbitraries.”

⁴ The Director also refers to Mr. Baggett’s recognition that, “for any particular city, there is a manageable number of arbitraries” (*id.*, citing A112). But this recognition is not “admitted prior art,” but rather an important insight made by Mr. Baggett. The Director also argues that Mr. Baggett “identified one prior art computer algorithm that sorted the data by interior cities, though that sort was not done first.” (Red Br. at 27, citing A105.) But the disclosure on page A105 does not “sort[] the data” by interior cities or by any other criterion.

5. The Director's Inherency Argument Is Wrong as a Matter of the Factual Record

In his opening brief (Blue Br. at 33), Mr. Baggett pointed out that the cited references do not inherently—i.e., necessarily—disclosed the claimed pre-processing step. In response, the Director argues that “Baggett does not show that Gardner or ATPCO *do not* necessarily disclose” the claimed step. (Red Br. at 27.) This is simply not true. Mr. Baggett discussed the unclaimed “inefficient” approach at length in the patent specification. (A105.) Gardner simply does not say that it makes constructed fares and clearly offers no teachings to **make** constructed fares; and ATPCO explicitly suggests that the unclaimed inefficient process is used.⁵ In any event, because Gardner or ATPCO *could* use the unclaimed approach, these references do not necessarily embody the claimed pre-processing step.

B. The Claims of Group Two Are Allowable for Similar Reasons

Claim 11 recites “determining a *second set of interior cities* that appear with a second gateway city in the published fare for the airline.” The Director, however, relies on the same disclosure to allegedly satisfy this element as to satisfy the “determining interior cities” element of claim 1. (Red Br. at 28.) This logic is plainly flawed, since nowhere does the Director explain where the references

⁵ Moreover, it is the PTO who has the burden of showing a *prima facie* case of invalidity. Shifting the burden as the Director proposes places the applicant in the unfair position of having to prove a negative.

disclose or suggest determining a “*second set*” of interior cities, as the claim explicitly requires. Nor has the Director pointed to substantial evidence that this step would have been obvious. To the contrary, the fact that the ATPCO manual describes constructing three-component fares *without* suggesting separately determining a second set of interior cities belies the Director’s position. Therefore, no substantial evidence supports the view that the claims of group two would have been obvious to a person of ordinary skill in the art.

C. None of the Cited Art Discloses or Suggests the Hash Table of the Group Three Claims

Claim 2 requires a hash table that is “indexed by an airline, interior-city pair” such that accessing the hash table returns “a list of gateway cities for which an airline has arbitraries that specify the interior city.” (A54.) Neither the Board nor the Director explain why a person of ordinary skill in the art would modify the prior art to arrive at the claimed invention. See *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S. Ct. 1727, 1741 (2007).

1. Neither the Board nor the Director Explains Why a Ordinarily-Skilled Artisan Would Search for a *List* of Gateway Cities

Most significantly, the Board’s string of hindsight-motivated conclusions (A30-31) do not result in the claimed invention. The Board held that “one of ordinary skill would have searched *pricing and flight schedules* by Gardner and ATPCO using hash tables. . . .” (A31 (emphasis added).) But Claim 2 requires

“accessing a hash table . . . to return a *list of gateway cities*” (A54 (emphasis added).) Even if Gardner or ATPCO suggested searching for “pricing and flight schedules,” the claim requires a hash table that returns a list of gateway cities. The Director does not explain why accessing a hash table to return a *list of gateway cities* would have been obvious in light of the cited art. Indeed, ATPCO itself does not mention flight schedules as part of constructed fares. As a result, the Board’s ruling must be reversed.

2. The Director Has Failed to Explain Why an Ordinarily-Skilled Artisan Would Make the Hindsight-Motivated Inferences Suggested by the Board

Moreover, the Board’s ruling, as reiterated by the Director (Red Br. at 30-32), is a classic example of impermissible hindsight reasoning. The Director’s argument begins with the proposition that “an airline fare data structure is essentially the same as a route data structure, but with fares instead of distance.” (Red Br. at 30, *citing* A30.) Neither the Board nor the Director, however, explains *why* a person of ordinary skill in the art would have used a “route data structure” instead of an airline fare data structure. In fact, there is no record evidence whatsoever about a “route data structure” that supports this contention.⁶

The Board then held (again without supporting evidence) that “route data” can be represented by graphs, and that a graph can be represented by an edge list

⁶ In its ruling on Mr. Baggett’s request for reconsideration, the Board sought to minimize the significance of its reliance on route tables. (A930-31.)

“indexed by the airline and the *origin city*.” (A30-31 (emphasis added).) The claim, however, requires that the index be based on airline and *interior city*, not origin city. (A54.) Neither the Board nor the Director explains why a person of ordinary skill in the art would have used an edge list indexed by airline and *interior city*. To the contrary, the Director points out that ATPCO “discloses selecting its records by airline, by the city pair, by the *gateway (major) city* and/or by fare class.” (Red Br. at 31.) The Director does not suggest that ATPCO discloses selecting records by *interior city*, as the claim requires.

To avoid this very temptation to engage in hindsight reasoning, rejections on obviousness grounds must be based on evidence. *See In re Kahn*, 441 F.3d 977, 986 (Fed. Cir. 2006) (“When the Board does not explain the motivation, or the suggestion or teaching, that would have led the skilled artisan at the time of the invention to the claimed combination as a whole, we infer that the Board used hindsight to conclude that the invention was obvious.”); *In re Grasselli*, 713 F.2d 731, 739 (Fed. Cir. 1983) (“It is fundamental that rejections under 35 U.S.C. § 103 must be based on *evidence*”) (emphasis added); *see also In re Translogic Tech.*, 504 F.3d 1249, 1260 (Fed. Cir. 2007) (“[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on *evidence* before the time of invention.”) (emphasis added). Rejections cannot be sustained by mere conclusory statements. *Kahn*, 441 F.3d at 988; *In re Sang-Su Lee*, 277

F.3d 1338, 1345 (Fed. Cir. 2002) (“The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims. . . .”); *see also In re Van Der Kop*, 9 F.3d 1531, 1533 (Fed. Cir. 1993) (“[T]he Commissioner’s brief is not prior art.”). Because the Board’s series of unsupported inferences constitute precisely the “conclusory statements” rejected by this Court’s case law, the decision of the Board should be reversed.

3. The Director Fails to Explain Why a Person of Ordinary Skill in the Art Would Have had a Reason to Use a Hash Table in the Context of a Constructed Fare

The Director failed to explain why a person of ordinary skill in the art would have had a reason to use a hash table because none of the art suggests the use of hash tables in the relevant context. Inventions usually rely upon building blocks long since uncovered. *KSR*, 127 S. Ct. at 1731. The more remote the prior art is from the context of the subject matter, the less persuasive it becomes on the question of obviousness. *Ziggity Systems, Inc. v. Val Watering Systems*, 769 F.Supp. 752, 798 (E.D. Pa. 1990). As Mr. Baggett described in his opening brief, the two general computer science treatises, Tremblay and Wiederhold, which serve as building blocks for the Director’s case of using a hash table, fail to mention constructed fares at all and do not suggest the use of a hash table in the context of the problem solved by Mr. Baggett, much less any of the specific features pertaining to the index of claim 2. Further, Tremblay and Wiederhold do not

provide any suggestion to one of ordinary skill that a hash table as arranged in claim 2 would have improved performance for producing constructed fares in ATPCO or retrieving unpublished fares (constructed fares) in Gardner. The mere existence of hash tables fails to show why a person of ordinary skill in the art would have used a hash table in the context of generating constructed fares.

The Director argues, however, that “using hash tables, or hashed files was a well-known efficient way to store data for efficient searching of *pricing and schedule data*.” (Red Br. at 30.) Indeed, Wiederhold discloses that “[h]ashed files find frequent use for . . . *pricing tables [and] schedules*.” (A940.) However, this disclosure falls well short of satisfying the PTO’s burden.

While Tremblay suggests using “hashed files” for pricing tables and schedules, claim 2 requires a hash table that returns “*a list of gateway cities*.” The hash table of claim 2 has nothing to do with “pricing tables” or “schedules.” Thus, no evidence before the Board suggests the use of a hash table in the manner recited by the claim. Indeed, were the Board’s decision left to stand, its reasoning would prevent any applicant from obtaining a patent on any combination of existing elements. This is not the law. *KSR*, 127 S.Ct. at 1740 (“[I]nventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known”).

D. The Board's Decision on the Claims of Group Four, Reciting Memoization, Should Be Reversed

The Board's decision on reconsideration, in which it allowed claim 9, said nothing about claim 29. There is no dispute that claim 29 should have been allowed along with claim 9. (*See* Red Br. at 35.) This Court should order the Board, on remand, to explicitly allow claim 29.

Mr. Baggett was not required to seek reconsideration of the Board's rejection of claims 20 and 41. *See* 35 U.S.C. § 141 ("An applicant dissatisfied with the decision in an appeal to the Board of Patent Appeals and Interferences . . . may appeal the decision to the United States Court of Appeals for the Federal Circuit."). Because claims 20 and 41 recite "memoization," and because, by the Board's own admission, none of the references before the Board describe memoization or would have rendered it obvious (A931), no substantial evidence supports the Board's rejection of these claims.

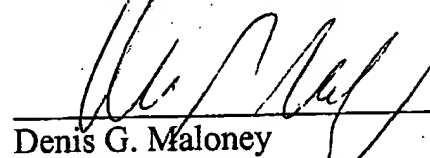
This Court should therefore reverse the Board's ruling, and remand with instructions to allow claims 20, 29, and 41.

III. CONCLUSION

For all of the foregoing reasons, this Court should reverse the ruling of the Board of Patent Appeals and Interferences, and remand the case with instructions to allow all pending claims.

February 17, 2009

Respectfully submitted,

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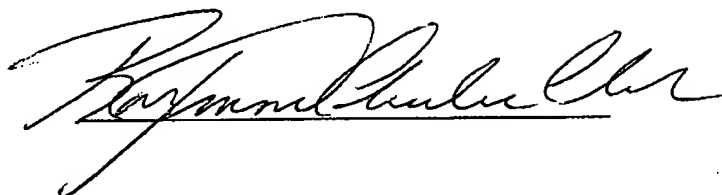
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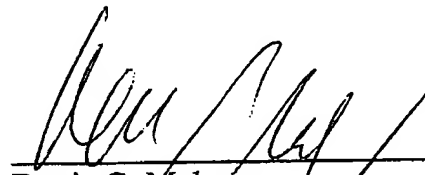
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CERTIFICATE OF COMPLIANCE

The brief for the plaintiff-appellant complies with the type-volume limitation set forth in Fed. R. App. P. 32(a)(7)(B). The relevant portions of the brief, including all footnotes, contain 4143 words, as determined by Microsoft Word® 2003.

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